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EXAMINER

MARTIN, LAURA E

ART UNIT PAPER NUMBER

2853

DATE MAILED: 11/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/680,033

Applicant(s)

MCGARRY ET AL.

Examiner

Laura E. Martin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 18, 19, 20, 21, 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Segerstrom et al. (US 6,213,580).

Claims 18-22 stand rejected as set forth in previous office action.

As per claim 18, Segerstrom et al. teaches a method for ink pattern adjustment (C3, L28-31) comprising identifying a position of two points on print media (1, 2, 3, 4) printed by a stationary (C12, L9), staggered printhead array (Fig 4); defining two reference points (C9, L16+) based upon the position of the two points, measuring a positional difference between two reference points, and adjusting printhead ejection according to the positional difference.

As per claim 19, Segerstrom et al. also teaches the two points on print media (points shown in Fig 6, two reference points are defined C12, L41-42) include points at the center of two ink pattern lines (in Fig 6, a reference point could be placed along the center of the reference line Fig 6A.210, which is the center ink drop in row 6.115 from printhead 1).

As per claim 20, Segerstrom et al. also teaches a method wherein the two points (C12, L41-42) include endpoints of at least one ink pattern line (reference point could be end point of Fig 6A.210 has an endpoint ink drop that could be placed as a reference point).

As per claim 21, Segerstrom et al. also teaches a method wherein the two reference points (C12, L41-42) include points on a reference line (Fig 6A) such that an imaginary line can be drawn from reference point (6.210 includes a inkdrop from printhead 1 that is in the center of row 6.115) to a point printed by the stationary (C12, L9), staggered printhead (Fig 4) array (end ink drop from printhead 11, Fig 6.115) forms a right angle (with the ink drop from printhead 1 in row 6.130).

As per claim 22, Segerstrom et al. also teaches two ink patterns (Fig 6.115 and Fig 6.130) having an overlapping ink point (fourth ink drop from printer 1 – first row – Fig 6.115), one intersecting point (the overlapping ink drop from printhead 1 – Fig 6.130 – is also a location of intersection), that is positioned at a right angle of intersection of imaginary lines drawn from each overlapping endpoint (Fig 6.115 and 6.130 have intersecting endpoints that, when the end points are connected by an imaginary line, will form a right angle).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 3, 6, 7, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 6550886) in view of Cowger (US 5568172).

Shimizu et al. teaches a stationary (line-type C1, L58) ink jet recording device (C1, L57) with an image scanning mechanism to provide positioning data about the positions of drops of ink ejected onto the media (a light sensor detects test patterns C7, L 27) from a large number of nozzles (C1, L59, Fig 1.104) from a number of stationary printheads (line-type ink jet head C1, L58, stationary printheads are illustrated in Fig 1.101); and a controller to determine a Y axis offset of at least two ink drops based on the positioning data (a detection means is used for detecting a positional error between ink drops with respect to a reference position C11, L41-45), wherein the controller is operable to adjust ink ejection timing (C6, L25+) of a number of nozzles (shown in Fig 1.104) based upon the determined Y-axis (C6, L25 – applicant's Y-axis is parallel to the paper feed direction; this direction is referred to as the X-axis by Shimizu et al.) and the controller is operable to interpret the data to identify the positioning of ink drops (a detection device used to detect the shifting amount of ink droplets in the X-axis and Y – axis C7, L65+) with print media advancement direction. (Media advancement direction has also been noted as the Y-axis). Shimizu et al. also teaches a reference line (Fig 4 and 6) from which the changes in both X-axis (print media advancement direction) and Y-axis (perpendicular to print media advancement direction) for each droplet are calculated, wherein the apparatus has at least two stationary printheads with a nozzle overlap zone (in Fig 1, four stationary printheads 1.101 are shown with overlapping

nozzle zones 1.104) wherein the controller is operable to adjust ink ejection (position of ink drop is adjusted in the paper feed direction – applicant's X-axis – by adjusting the timing of the ink drop ejection C6, L20+) of a number of the nozzles (a test pattern is printed by all of the nozzles of the printheads C7, L4-5) to reduce redundant drop ejection within the nozzle overlap zone (Fig 2 shows the deflection used to reduce redundant drop ejection in the nozzle overlap zones as illustrated by Fig 1.104).

Shimizu et al. also teaches a ink jet recording device C1, L57) with at least two printheads (Fig 1.101) each having a number of nozzles thereon (Fig 1.104), wherein the printheads are configured on a staggered (Fig 1.101) stationary (line-type C1, L58) array for forming an image on print media (Fig 4, 6); a scanning mechanism for scanning ink placement pattern information (a light sensor detects test patterns C7, L27), and a controller to determine X-axis and Y-axis (a detection means is used for detecting a positional error – both parallel to sheet feed [applicant's Y] and perpendicular to sheet feed [applicant's X axis] between ink drops with respect to a reference position C11, L41-45 – of at least two printheads (at least one head module C3, L4-5) based upon the ink placement pattern information (ink droplet is selectively ejected onto a recording medium C3, L8).

Shimizu et al. does not teach a controller that interprets the data to identify a Y-axis offset of at least two ink drops.

Cowger teaches a controller that interprets the data to identify a Y-axis offset of at least two ink drops (dots printed by a print bar when paper on belts is in a first

position are registered with dots printed by a print bar when paper has moved to a second position C5, L18-21 – “position” refers to both the X-axis and Y-axis C2, L47+).

It would be obvious at the time that the invention was made to one having ordinary skill in the art to combine multiple stationary printheads as taught by Shimizu et al. with Cowger’s controller that interprets X-axis and Y-axis offsets so as to allow for accurate measurement and adjustment of the stationary printheads.

Claims 4, 5, 8, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 6550886) in view of Cowger (US 5568172) as applied to claims 1, 2, 6, 7, 9, 10 above, and further in view of Segerstrom et al. (US 6,213,580).

As per claims 4 and 5, Shimizu et al. and Cowger teach the apparatus of claim 1; however, neither teaches a controller that can interpret the data to identify a rotational offset of at least two ink drops ejected from one stationary printhead.

Segerstrom et al. teaches a controller (Fig 7.120) that can identify the rotational offset of at least two ink drops ejected from one of the stationary printheads. (In Fig 2.42, each printhead has a plurality of nozzles; Fig 6 illustrates a test pattern in which all printheads eject a plurality of ink drops. A horizontal row of five pixels are printed from a single print head; these pixels are analyzed to determine if they are equidistant along the horizontal axis, if not, it is calculated as to how much the printhead must be rotated in order for the printhead to eject equidistant drops along the horizontal axis C9, L62+).

It would be obvious at the time that the invention was made to one having ordinary skill in the art to combine the inkjet printer comprising a controller as taught by Shimizu et al. with a printhead that can identify a rotational offset of at least two ink drops as taught by Segerstrom et al. because measuring the rotational offset of the printhead based on a test pattern and allowing for rotation will improve the overall quality of the image by properly aligning all ink drops onto the print media.

As per claim 8, Shimizu et al. and Cowger teach the apparatus of claim 1, and Shimizu et al. teaches an inkjet printer comprising of a controller (C3, L6) that changes position shift along the axis parallel to media feed direction (C6, L25) by altering ink ejection timing (C6, L 25-27) based upon an offset (L19-20). Shimizu et al. and Cowger do not teach a controller that is operable to determine a rotational offset of at least two ink drops with respect to a reference line.

Segerstrom et al. teaches a controller (Fig 7.120) that determines rotational offset (it determines that a selected printhead module requires repositioning C8, L23-24, repositioning referring to X, Y, and Z axis realignments C3, L29-30) of at least two drops (Fig 6..115) with respect to a reference line (five drops are printed into each reference line from a single printhead in Fig 6.115).

It would be obvious at the time that the invention was made to one having ordinary skill in the art to combine the controller taught by Shimizu et al. with the controller by Segerstrom et al. because a rotational offset will provide for a wider degree

of printhead adjustment, as well as provide the capability of a sharper image by allowing the ink drops to fall in their allotted location.

As per claims 11 and 12, Shimizu and Cowger teach the apparatus of claim 10, and Shimizu et al. teaches an inkjet printer with a controller (C3, L6) that is operable to determine positioning data relative to a reference line (as shown in Fig 4.A); however, neither teach a reference line in the print media feed direction, nor does he teach a means to determine the rotational offset. Segerstrom et al. teaches a reference line (Fig 6.102) in the print media feed direction (C6, L25) and a controller (Fig 7.120) that is operable to determine the rotational offset of the reference line offset (it determines that a selected printhead module requires repositioning C8, L23-24, repositioning referring to X, Y, and Z axis realignments C3, L29-30).

It would be obvious at the time that the invention was made to one having ordinary skill in the art to combine the controller taught by Shimizu et al. with the controller by Segerstrom et al. because a line in the print media scan direction will easily illustrate the offsets of ink drops and rotational offset will improve the capability of adjusting printheads so that they have the capability of printing a sharper image by allowing the ink drops to fall in their allotted location.

Claims 13, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Wyngaert et al. (US 6,554,398) in view of Shimizu et al. (US 6550886).

As per claims 13 and 17, Wyngaert et al. teaches an apparatus for printing (inkjet printer shown in Fig 1) comprising a scanning mechanism (optical scanner C7, L37-38) to provide positioning data (scanned data input into a computer where it can be compared with actual test image to detect misalignment C7, L32-43) of a number of nozzles (Fig 1.110) from at least two stationary, staggered printheads (see Fig 1.104 and 104a for multiple, stationary, and staggered printheads) and a means for determining the X-axis and Y-axis offsets of the printheads based on the positioning data (means for sensing the position of the printhead structures can be coupled to a computer so as to compare the actual data to the test image with the target data and to display the degree of misalignment C8, L2-5; position is defined as X, Y, and sometimes Z direction C8, L9-10). Wyngaert et al. also teaches a means for determining a rotational offset of at least one printhead (an sensor assesses the relative position of the printhead structures, the sensor is coupled to a computer so that the information can be stored, the sensor is further coupled to stepping motors for actuating the linear actuators automatically to a degree depending of the difference between the actual positions sensed by the sensor and the target position C8, L2-16; z-axis shown in Fig 3, is the rotational axis; Fig 3.110 shows the axis about which the Y-frame can rotate C5, L57-58)

Wyngaert et al. does not teach X and Y offsets are selected from the group including: X and Y offsets of the two printheads relative to each other, and X and Y offsets of the two printheads relative to a media advancement direction.

Shimizu et al. teaches the X and Y axis offsets of the two printheads (a detection device used to detect the shifting amount of ink droplets in the X-axis and Y –axis C7, L65+) relative to a print media advancement direction. (Media advancement direction has also been noted as the Y-axis).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the disclosures of Wyngaert et al. and Shimizu et al. in order to print more accurate images.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wyngaert et al. and Shimizu et al. as applied to claims 13 and 17 above.

Wyngaert et al. teaches an inkjet printing apparatus (shown in Fig 1) that is described in claim 13, however, a means for adjusting including the ink jet ejection time of at least one nozzle is not taught.

Shimizu et al. teaches ink ejection timing as being used for a means of adjusting (the position shift with respect to the direction parallel to sheet feed is adjusted by changing the ejection timing of the ink droplet C6, L25-27).

It would be obvious at the time that the invention was made to one having ordinary skill in the art to combine the inkjet printing apparatus of Wyngaert et al. with the ink ejection timing as being used for a means of adjusting taught by Shimizu et al. because adjusting inkjet ejection timing allows for a more accurate adjustment when the paper feed is constant.

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wyngaert et al. and Shimizu et al. as applied to claims 13 and 17 above, and further in view of Segerstrom et al. (US 6,213,580).

As per claims 14 and 15, Wyngaert et al. and Shimizu et al. teach the apparatus of claim 13, and Wyngaert et al. teaches a printing apparatus (inkjet printer shown in Fig 1) with means for determining X-axis and Y-axis offsets (C3, L34-36). Wyngaert also teaches a means for adjusting at least one printhead (Fig 1.104) based on the positional difference (an ink jet printer provides means for sensing the relative position of the printhead structures C7, L55-57; the information is coupled to a computer C8, L2-5; an operator reads the information and actuates the linear actuators for aligning the printhead structures (C8, L5-8). Neither reference teaches an apparatus that determines X-axis and Y-axis offsets including determining a number of reference points and determining a positional difference between at least two of the number of reference points.

Segerstrom et al. teaches a controller (Fig 7.120) determining a number of reference points (shown in Fig 6, there are a set number of reference points used each time) and determining a positional difference between at least two of the points. (In Fig 6A, 6A.214 is offset from the other reference points (6A.212, 128, 129, and 126). A positional difference between the ink drop offset from the line is determined (C9, L13-21).

It would be obvious at the time that the invention was made to one having ordinary skill in the art to combine the apparatus of Wyngaert et al. and Shimizu et al. with a controller for determining a number of reference points and their position as taught by Segerstrom et al. because using the position of ink dots to determine the offset will provide a clearer picture, as the ink drops will be placed on the media in a location with respect to each other.

As per claim 23, Segerstrom et al. also teaches a method of printing a test pattern (test pattern is comprised of arrays of ink drops, as shown in Fig 6) from a stationary (C12, L9), staggered printhead (shown in Fig 4) in which the two reference points include one center point (in Fig 6, a reference point could be placed along the center of the reference line Fig 6A.210, which is the center ink drop in row 6.115 from printhead 1) and one intersecting point (the overlapping ink drop from printhead 1 – Fig 6.130 – is also a location of intersection) that is positioned at a right angle intersection of imaginary lines drawn from each center point (Fig 6.115 and 6.130 have intersecting endpoints that, when the end points are connected by an imaginary line, will form a right angle). However, Segerstrom et al. does not teach a printhead array that includes points at the center of two printheads.

Shimizu et al. teaches an inkjet recording device that ejects an ink droplet from each of the nozzles (C12, L9-11). An ink drop is printed from each nozzle; therefore, there will be an ink drop on the test pattern from the center of each printhead.

It would be obvious at the time that the invention was made to one having ordinary skill in the art to combine the method of printing a test pattern as taught by Segerstrom et al. with the printing of each nozzle as taught by Shimizu et al. because printing ink drops from every nozzle creates a fuller image and will test each nozzle to determine if it is properly working and aligned.

Claims 24 and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Serra et al. (US 6,773,086) in view of Segerstrom et al. (US 6,213,580) and Beauchamp (US 6,474,765).

Serra et al. teaches a computer readable medium (C6, L13) that causes a device (stationary, staggered shown in Fig 3 inkjet printer Fig 1.100) to perform a method (C6, L12). However, Serra et al. does not teach identifying a position of two points on the print media which are defined as reference points, measuring the positional differences between the two reference points, adjusting printhead ink ejection according to the positional difference, or adjusting a printhead ink ejection during a print job.

Segerstrom et al. teaches the identifying of two points on print media that are defined as reference points (C12, L40), measuring the positional difference between the two points (calculating the first distance along the first axis and second distance along the second axis C12, L54-57), and adjusting the printhead ink ejection (using a first means for positioning to translated selected printhead module C13, L38-39).

Beauchamp teaches a method of that includes adjusting during a print job (the printer is commanded to print adjacent parts with the printhead moving only in a single direction (C7, L55-56).

It would be obvious at the time that the invention was made to one having ordinary skill in the art to combine the computer readable medium taught by Serra et al. with the method of measuring position and moving printheads based on a determined position taught by Segerstrom because it is necessary to install a program onto a computer so that the printer will function properly with the computer.

It would be obvious at the time that the invention was made to one having ordinary skill in the art to combine the computer readable medium taught by Serra et al. with Beauchamp's constant printing method because being able to read a program while a printer is printing will allow for less correction time and an improved image.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serra et al. (US 6,773,086) in view of Segerstrom et al. (US 6,213,580) and Shimizu (US 6,550,886).

Serra et al. teaches a computer readable medium (C6, L13) that causes a device (stationary, staggered shown in Fig 3 inkjet printer Fig 1.100) to perform a method (C6, L12). However, Serra et al. does not teach ejecting an ink drop from two or more nozzles in a nozzle column to print an ink placement pattern on a print media, repeatedly ejecting ink from a nozzle while advancing the print media to print a reference line, scanning an image of the ink placement pattern and the reference line,

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calculating rotational offset for the ink placement pattern relative to the reference line, and adjusting the nozzle ink ejection timing based on the rotational offset relative to the reference line.

Segerstrom et al. teaches the printing of a reference line (shown in Fig 6A) and the calculating of a rotational offset for the ink placement pattern relative to a reference line (Fig 6 shows the test pattern, C13, L2-10 discusses analyzing the test pattern and moving the printhead accordingly). Shimizu et al. teaches the ejection of ink drops from two or more nozzles (all nozzles print ink drops C12, L46-47) in a nozzle column (Fig 1.104 shows nozzle columns), the scanning of the ink placement pattern (C7, L27 describes a light sensor scanning mechanism), and the adjusting of nozzle ink ejection timing based on the offset (C6, L25-27 describes changing the offset of the ejection timing based on the axis parallel to the paper feed). It would be obvious at the time that the invention was made to one having ordinary skill in the art to combine computer readable medium taught by Serra et al. with the printing of a reference line and rotational offset adjusting capabilities of Segerstrom et al. because rotational offset adjustment allows for a higher print quality and longer lasting computer that requires less maintenance.

It would be obvious at the time that the invention was made to one having ordinary skill in the art to combine the computer readable medium taught by Serra et al. with the ink drop ejection on the printable medium, sensing, and adjusting of ink timing because these steps are features that will improve the printing quality, as well as the adjusting quality of the printer.

Response to Amendment

In light of applicant's amendments to claims 1 and 10 the 35 USC 102 rejections of claims 1, 2, 6, 7, 9, and 10 are hereby withdrawn and thus applicant's arguments directed thereto are rendered moot.

Regarding claims 13 and 17, applicant amended claim 13 to include:

means for determining X and Y axis offsets of the printhead based on the positioning data where the X and Y axis offsets are selected from the group including: X and Y offsets of the two printheads relative to each other, and X and Y offsets of the two printheads relative to a media advancement direction.

Shimizu et al. clearly sets forth the controller is operable to interpret the data to identify the positioning of ink drops (a detection device used to detect the shifting amount of ink droplets in the X-axis and Y –axis C7, L65+) with print media advancement direction. (Media advancement direction has also been noted as the Y-axis).

Regarding claims 18-22, applicant argues:

The Segerstrom et al. reference does not describe identifying a position for two points on print media printed by a stationary, staggered printhead array, nor does the Segerstrom et al. reference describe defining two reference points based upon the position of the two points.

Applicant's attention is drawn to figure 6 and C9, L16+, which discloses the argued feature; thus contrary to applicant's arguments, Segerstrom et al. meets the claims.

Regarding applicants arguments for claims 3, 4, 5, 8, 11, and 12, applicant argues claims to be allowed as dependent on allowable claims 1 and 10. It is noted that claim language added to claim 1 is taken from claim 3, previously rejected under 35 USC 103, and applicant has failed to argue the merits of this rejection.

Regarding applicant's arguments to claims 14, 15, 16, and 23, applicant fails to argue these claims separately.

Regarding claims 24 and 25, applicant argues Serra et al. does not describe identifying a position for two pints on print media printed by stationary, staggered printhead array and defining two reference points based upon the position of two points. However, as pointed out above, Segerstrom et al. meets this claim limitation.

Regarding claim 26, Segerstrom et al. teaches repeatedly ejecting ink (Fig 6, C9, L7+).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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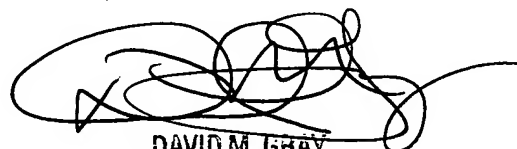
mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David M. Gray can be reached on (571) 272-2119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura E. Martin



DAVID M. GRAY
PRIMARY EXAMINER